Intelligent X-ray Defect Detection System

ISD-NFX4016-A3

Product Overview

The X-ray intelligent defect detection system leverages advanced artificial intelligence and the AI-XSP imaging algorithm to deliver high-precision, highly adaptable detection of foreign objects (such as metal, glass, stones, plastic, bone, etc.) and defects (such as miscounts and missing parts). It provides robust technical support for improving product quality and production efficiency.

Product Features

Ultra-HD Detection

Powered by a 0.1mm high-definition detection module and TDI multi-exposure imaging technology, combined with upgraded physical grid technology to suppress light crosstalk, image clarity is enhanced by 16 times (compared to standard-definition models) and signal-to-noise ratio is improved by 500%. This enables high-definition detail capture and significantly enhances the detection capability for tiny foreign objects and defects.

Advanced AI Algorithms

Utilizing deep learning algorithms and industry-level foundational models built on large-scale datasets, the system offers robust baseline recognition capabilities. Based on these foundational models, it achieves excellent detection performance with minimal sample training, enabling rapid deployment with high accuracy and strong adaptability.

Intelligent Imaging Algorithms

The newly developed Raytina image enhancement engine integrates multi-core dual-version

网 址: www.hikrayin.com
邮 箱: Market@hikrayin.com
地 址: 浙江省杭州市滨江区启智街630号
电 话: 0571-89911828
杭 州 睿 影 科 技 有 限 公 司
Hangzhou Rayin Technology Co., Ltd.

enhancement algorithms to easily meet the demand for high-contrast and detail-rich imaging under various scenarios. This greatly improves the detection rate of foreign objects and defects while reducing false alarms.

User-Friendly Operation

The software interface is intuitive and user-centered, with a plug-and-play configuration that requires no parameter tuning. Guided setup minimizes the learning curve and shortens training time, enabling quick onboarding with low dependency. Multi-level access control prevents unauthorized operations.

Reliable Hardware Design

Featuring a dual-circulation cooling system, intelligent moisture protection, and core component safeguarding, the device operates reliably across a wide temperature range with an IP66 protection rating. Built with premium components and system-level redundancy, it ensures high operational stability. The system also provides comprehensive safety: radiation shielding (<1μSv/h), food-grade contact materials, and full-process safety protection for guaranteed product integrity.

Comprehensive Certifications

The product is supported by complete quality system certifications, qualifications, and a robust supply chain. It complies with FDA, CE, HACCP, and GMP standards.

Extensive Application Scalability

Supports online AI training platforms, device-based training, and high-performance computing methods. With minimal sample input, it can rapidly train models that adapt automatically to different application scenarios, enabling rapid product expansion with excellent detection accuracy and strong scenario adaptability.

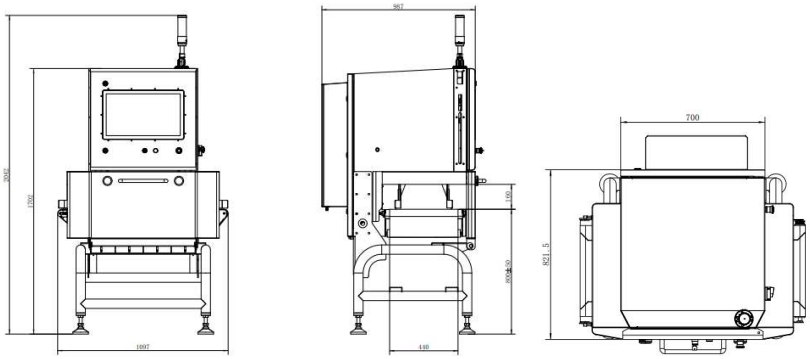
Technical Specifications

Item		Parameter	Note
Structure	Tunnel Width	400mm	
	Tunnel Height	160mm	
	Overall Dimensions	2042mm(H)*1308mm(L)*1056mm(W)	Includes signal light height
	Machine Weight	380kg	

	Housing Material	Stainless Steel (SUS304)	
Conveyor	Conveyor Belt Material	Food-grade PU	
	Conveyor Belt Width	418mm	
	Conveyor Height from Ground	800±50mm	Customizable
	Conveyor Speed	10~60m/min	
	Max Load Capacity	10kg	
X-ray Generator & Detector	X-ray Generator Tube Voltage	40~80kv	Adjustable voltage, total power consumption < 350W
	X-ray Generator Tube Current	4000-8000μA	
	X-ray Power Consumption	350W	
	Detector Resolution	0.1mm multi-exposure detection	
Detection Sensitivity	Stainless Steel Ball (Φ)	0.2mm	
	Stainless Steel Wire	0.2*2mm	
	Glass Ball (Φ)	0.8mm	
	Ceramic Ball (Φ)	0.8mm	
	Algorithm Support	Foreign object & defect detection	
Configuration	Protection Rating	IP66	
	Product Form	Packaged or bulk	
	Rejection Method	NG stop; automatic rejection (optional rejection mechanism available)	Optional multiple rejection mechanisms
	Alarm Type	Audio and visual alarm	
	Display	21.5-inch touchscreen (1920×1080)	
	Cooling Method	Industrial air conditioner	Constant temperature control / temperature adjustable via control panel
	Radiation Shielding	4 layers of lead-free curtains (inlet & outlet)	
	Radiation Safety	< 1 μSv/h	
	Power Supply	AC220V,50/60HZ	Permissible voltage fluctuation range within ±10%

	Operating Temperature	-10~40℃	
	Operating Humidity	30–90% RH, non-condensing	
	Interfaces	Ethernet, USB; supports MES integration	

Dimensions



Optional Accessories (The following are standard rejection mechanisms; other mechanisms can be customized based on on-site requirements)

Air Jet Rejection

Swing Arm Rejection

Drop Rejection

Push Rod Rejection

Application Scenarios

Snack Foods

Processed Meat Foods

Aquatic Products

Food Additives

Dairy Products

Agricultural and Sideline Products

Pharmaceuticals & Health Products

Daily Chemical Products